

AMENDMENTS TO THE CLAIMS:

The listing of claims will replace all prior versions, and listings of claims in the application:

LISTING OF CLAIMS:

1. (Previously Presented) A hybrid device comprising:

 a substrate;

 a spring interconnect formed on the substrate, the spring interconnect including,

 an elastic material that is operatively associated with a surface of the substrate including,

 an anchor portion fixed to the substrate, and

 a free portion spaced from the substrate, the free portion including a tip separated from the substrate; and

 a sensor formed on the substrate, the sensor including an active layer and contacts, said active layer configured to sense light and be at least partially transparent to light at selected wavelengths,

 said spring interconnect and said sensor being integrated on the substrate.

2. (Previously Presented) The invention according to claim 1 wherein the hybrid device further includes at least one of a single light source, an array of lasers, and an array of light emitting diodes (LEDs), positioned to emit at least a portion of light through at least a portion of the sensor.

3. (Previously Presented) The invention according to claim 2 wherein the sensor is designed and aligned with at least one of the laser array and the LED array, to receive the emitted light from at least one of the single light source, some of the lasers of the laser array and some of the LEDs of the LED array.

4. (Previously Presented) The invention according to claim 2 wherein the sensor, including the active layer, is designed and aligned with at least one of the laser array and the LED array to receive and pass, through the active layer, an

amount of the emitted light from a portion of at least one of the laser array and the LED array sufficient for a printing operation.

5. (Previously Presented) The invention according to claim 4 wherein the substrate is designed and aligned with at least one of the laser array and the LED array to receive and pass, through the active layer, an amount of the emitted light from a portion of at least one of the laser array and the LED array sufficient for a printing operation.

6. (Original) The invention according to claim 1 wherein the sensor is an array of sensors.

7. (Cancelled)

8. (Previously Presented) The invention according to claim 1 wherein the sensor and the spring interconnect are comprised of materials which allow for integration of the spring interconnect and the sensor on the single substrate during a manufacturing process, wherein at least one of the materials for the spring interconnect and the sensor is the same.

9. (Currently Amended) ~~The invention according to claim 1 wherein the sensor is comprised of, A hybrid device comprising:~~

a substrate;

a spring interconnect formed on the substrate, the spring interconnect including:

an elastic material that is operatively associated with a surface of the substrate including:

an anchor portion fixed to the substrate, and

a free portion spaced from the substrate; and

a sensor formed on the substrate, the sensor including:

a first transparent/conductive layer;

an active layer located on top of the first transparent/conductive layer which active layer is capable of sensing light;

a second transparent/conductive layer located on top of the active layer;

a passivation/release layer located over at least the first transparent/conductive layer and the second transparent/conductive layer;

a first via through the passivation/release layer to the first transparent/conductive layer;

a second via through the passivation/release layer to the second transparent/conductive layer; and

first and second metal layers, deposited in the first and second vias, providing contacts to the first and second transparent/conductive layers respectively, wherein the metal layers act as signal lines to receive and carry signals from the active layer.

10. (Cancelled)

11. (Currently Amended) The invention according to claim 1 wherein the elastic material is a stressed metal layer having sub-layers of differing stresses stress-gradients.

12. (Previously Presented) The invention according to claim 9, wherein the sensor further includes an absorption layer, located between the second transparent/conductive layer and the passivation/release layer, wherein the absorption layer absorbs unwanted visible light prior to being detected by the active layer.

13. (Previously Presented) The invention according to claim 9, wherein the active layer is a three layer element, wherein a first layer is a n+-doped amorphous silicon, the first layer being one of, but not limited to n+ phosphorous-doped amorphous silicon and n+ arsenic-doped silicon;

wherein a second layer is an intrinsic amorphous silicon;

wherein a third layer is a p+-doped amorphous silicon, the third layer being, but not limited to, p+ boron-doped amorphous silicon.

14. (Original) The invention according to claim 1 wherein a switch is located, between the sensor and the substrate, such that the sensor is an active semi-continuous sensor.

15. (Previously Presented) The invention according to claim 14 wherein the switch is a thin-film-transistor (TFT).

16. (Previously Presented) The invention according to claim 1 wherein the spring interconnect is a plurality of spring interconnects.

17. (Currently Amended) A hybrid device comprising:
a light emitting [[laser]] device capable of emitting light at a certain wavelength and including a plurality of lasers;
a substrate;
a spring interconnect formed on the substrate, the spring interconnect including,
an elastic material operatively associated with a surface of the substrate including,
an elongated anchor portion fixed to the substrate, and
a free portion bent up and away spaced from the substrate; and
a sensor formed on the substrate in an integrated manner with the spring interconnect, the sensor including an active layer and contacts, wherein said substrate and said sensor, including the active layer, are at least partially transparent to light at the wavelength emitted by the light emitting [[laser]] device; and said at least one of the sensor and said at least one spring interconnect being separately fabricated and aligned, such that at least a portion of the light emitted directly by the [[laser]] light emitting device is directed through at least a portion of the substrate and the active layer of the sensor.

18. (Cancelled)

19. (Previously Presented) The invention according to claim 17 wherein the sensor is sized such that each of the lasers emits light at least partially through the sensor.

20. (Previously Presented) The invention according to claim 17 wherein the sensor is a plurality of sensors, sized such that a sub-group of the lasers may emit light through selected ones of the sensors.

21. (Previously Presented) The invention according to claim 19 wherein the lasers are arranged as a printbar, and the spring interconnect is in electrical contact with the printbar.

22. (Currently Amended) A calibration/printing system comprising:
a sensor configuration including a sensor element integrated on a substrate with a plurality of spring interconnects disposed on the substrate;
a light source aligned with the sensor configuration such that at least a portion of the light directly from the light source is sensed and passed through the active layer of the sensor and at least a first of the spring interconnects is in physical contact with a portion of the light source; and
a driver chip aligned with the sensor configuration and the light source such that at least a second of the spring interconnects is in physical contact with a portion of the driver chip, and a communication path is formed between the light source and the driver chip by the at least first and second spring interconnects.

23. (Previously Presented) The invention according to claim 22 wherein the driver chip further includes:

a comparator for comparing a sensor readout current from the sensor and a reference current;
a converter arrangement which converts the output of the comparator into digital data representing characteristics of the light source;
a set of low frequency shift registers configured to receive and store the digital data;
an activation signal selectively supplied to the light source, the activation signal designed to control operation of the light source to selectively emit light therefrom;
a driver designed to interpret the digital data as activation signal correction information for the activation signal;

a high frequency shift-register configured to receive and store digital image data from a source external to the driver chip; and

an enable/disable output signal from the high frequency shift-register to selectively supply the activation signal and light source correction information to the light source, wherein an amount of light emitted by the light source is controlled.

24. (Currently Amended) The invention according to claim [[22]] 23 wherein the digital image data from the source external to the driver chip is supplied as high frequency bit stream data.

25. (Original) The invention according to claim 22 wherein the light source is a printbar having an array of light sources, and wherein the printbar is controlled to activate the light sources in a sequential manner to obtain calibration data to be stored in the driver.

26. (Currently Amended) A hybrid device comprising:

a spring interconnect structure disposed on a substrate; and

at least two devices electrically connected by the interconnect structure wherein one of the devices is a sensor disposed on the substrate, the sensor including:

a first transparent/conductive layer,

an active layer and contacts, said active layer sensing light and being located on top of the first transparent/conductive layer,

a second transparent/conductive layer located on top of the active layer,

a passivation/release layer located over at least the first transparent/conductive layer and the second transparent/conductive layer, and

an absorption layer, located between the second transparent/conductive layer and the passivation/release layer, wherein the absorption layer absorbs unwanted visible light;

and another one of the devices is at least one of a single light source, an array of lasers, and an array of light emitting diodes (LEDs), positioned to

emit light directly to and at least partially through the active layer of the sensor.

27-28. (Cancelled)

29. (Currently Amended) A hybrid device comprising:

a substrate;

a spring interconnect formed on the substrate which interconnect electrically connects at least a first device and a second device, the spring interconnect including:

an elastic material that is operatively associated with a surface of the substrate including:

an elongated anchor portion fixed to the substrate, and a bent up free portion which makes an electrical contact with one of the first and second devices; and

a sensor formed on the substrate, the sensor including an active layer and contacts, said active layer being capable of sensing light, the spring interconnect and the sensor being integrated on the substrate.